UNITED NATIONS

UNITED NATIONS
WATER CONFERENCE
MAR DEL PLATA, ARGENTINA, MARCH 1977

Distr.
GENERAL

E/CONF.70/A.1
3 August 1976
ENGLISH
ORIGINAL: SPANISH

WATER LAW AND LEGISLATION: HOW TO USE THEM TO OBTAIN OPTIMUM RESULTS FROM WATER RESOURCES

by Guillermo J. Cano*

Note: This report was prepared at the request of the Conference secretariat as a supporting document for the Conference. The views expressed are those of the author and do not necessarily reflect the position of the United Nations.

* Honorary President of the International Association for Water Law; Governor for Latin America of the International Council of Environmental Law; member of the Committee on International Water Resources Law of the International Law Association.

CONTENTS

	Page
Preface	4
1. The golden rule: there is no golden rule	5
2. The drafters of water laws and the persons for whom they are intended	6
3. Role of policy-making and legislative authorities. Role of users	7
4. Content of water laws: incomplete laws. Degree of government intervention decisive	9
5. The hydrological cycle and the consolidation of water laws relating to the various water environments	13
6. Are codes the answer? Changes in legislation	14
7. Legislative methodology	16
8. Negative aspects of water legislation	17
A. Uncertainty and insecurity	17
B. Rigidity	18
C. Lack of completeness	19
D. Lack of functional co-ordination. Integration with natural resources and environmental legislation	19
E. Lack of territorial integration: inter-jurisdictional problems	20
(i) National	20
(ii) International	21
F. Faulty administrative co-ordination	24
G. Use-oriented instead of resource-oriented	25
H. Lack of realism	25
I. Attitude towards the adoption of technology	26
J. Factors of legal or customary origin hampering the development of water resources	27
9. Prevailing trends in the modernization of water laws	28
A. Public ownership of water and increased government control	28
B. Administrative management versus judicial management	28

/...

CONTENTS (continued)

Page

C. Necessity of maintaining a water resources inventory and a register of water rights 28

D. Water charges and taxes 29

E. Environmental conservation versus development 29

F. He who pollutes must pay 29

G. Attack harmful effects at their source 29

H. The basin as the unit of water management. Water transfers . . . 30

I. Determination of present and prospective uses 30

J. Legislation on flood plains, erosion, salinity and pollution . . . 31

K. Organization of information 31

10. Water legislation as a policy instrument in other areas 31

11. Conclusions 32

Preface

1. The purpose of this paper is to treat in depth the legal topics and criteria 1/ dealt with in the Secretariat document prepared for the Mar del Plata Conference in connexion with item III of its agenda. 2/ It is hoped that this will contribute to a more effective use of water legislation as a tool for coping with present and future problems encountered in carrying out sound water policies.

2. The International Association for Water Law, a non-governmental organization in consultative status with the Economic and Social Council, held its second international conference at Caracas in February 1976. The agenda of that conference had been prepared in anticipation of the Mar del Plata Conference because the Association's conference had been previously designated by the Secretary-General of the United Nations as one of the preparatory meetings of experts for the Mar del Plata Conference. The Caracas Conference had in its turn received, and had examined as a matter of prime importance, the results of another conference which had preceded it, namely, the Conference on Global Water Law Systems, 3/ held at Valencia, Spain, in September 1975. The number and the high professional standing of the legal experts from more than 50 countries, who, together with experts from other fields and the representatives of 44 Governments, took part in the two conferences, are a guarantee that the conclusions and recommendations 4/ adopted at those conferences reflect the "state of the art" of the matters being dealt with here in 1975-1976. Those conclusions and recommendations are therefore taken fully into account in this paper.

3. The same is true of the views put forward in 1972 by a Panel of Experts appointed by the Economic Commission for Asia and the Far East (ECAFE) and embodied in a document issued by that Commission. 5/ While that document is mainly concerned with the water codes of the countries of the EC/FE region, it also makes reference to some countries outside that region.

1/ Matters relating to the bodies responsible for the administration and management of water resources are dealt with only in so far as they concern the legal regulation of such bodies and the rights of those who are subject to their administration.

2/ E/CONF.70/CBP.3. Policy options.

3/ See George Radosevich The International Conference on Global Water Law Systems in review, in: International Association for Water Law, "Second International Conference on Water Law and Water Management - working papers" (Caracas, 1976), vol. 1, p.1. Nine "considerations" were adopted by the Valencia Conference by consensus on 8 September 1975.

4/ See Vol. 17 of the "Working Papers" referred to in the preceding foot-note. This contains, in English and Spanish, the 52 recommendations adopted by the Caracas Conference.

5/ Guidelines for the Drafting of Water Codes, United Nations publication, Sales No. E.74.II.F.2.

4. It is worth noting that most of the Caracas recommendations were adopted by consensus. Some, however, were put to the vote, and it may be presumed that there was some difference of opinion regarding them. This reflects a circumstance of some importance, which is noted in the Secretary-General's document, 6/ namely, that the laws and legal institutions concerned with water are not transferable, without adaptation, from one country to another, and thus any attempt to obtain a consensus on recommendations in this matter seems to be an exercise in futility.

5. The wide range of the branches of knowledge that are reflected in the conclusions and recommendations in question - as regards both the topics dealt with and the specialities of the participants in the relevant conferences - is attributable to the very nature of water law and legislation and to the effectiveness of its role as an instrument in the implementation of water policy.

6. While accentuating certain of the ECAFE, Caracas and Valencia recommendations, this paper will also try to reflect the current trend towards, and the experience with, the integration of water law with the much broader, but not entirely analogous, areas of natural-resources law and environmental law. 7/

1. The golden rule: there is no golden rule 8/

7. The Valencia Conference (1975) identified the following systems of water law among those existing in the world: French, Spanish, British, Italian, Soviet, Hindu-Bali, Moslem, Latin American, Israeli, United States and Asian, each with its own particular characteristics. 9/ The areas in which these systems apply embrace both the countries in which the systems originated and the countries which came under their influence during the historical period of colonization. More recently, other areas have come under the influence of these systems by reason of both bilateral and multilateral technical assistance activities. Moreover, within each area the particular systems have undergone a certain degree of change in the process of adaptation to local conditions. This has occurred even within a single country - such, for example, as the United States of America, where in the matter of granting water use rights there exist side by side systems as dissimilar as riparian rights and rights of prior appropriation. 10/

6/ See document referred to in foot-note 2.

7/ See documentation of the FAO Regional Seminar of Experts on Environment and Development (Bogota, July 1976), especially documents RLAT 801/76/22 (J. Mayda), 24 (G. J. Cano) and 25 (J. Carrizosa).

8/ G. Bernard Shaw.

9/ See document referred to in foot-note 3.

10/ G. J. Cano Evolución histórica y geográfica del derecho de aguas y su papel en el manejo y desarrollo de los recurses hídricos /Historical and geographical evolution of water law and its role in the management and development of water resources/ (Valencia, 1975), International Association for Water Law, paras. 10-14. English version included in the proceedings of the Valencia Conference, 1975.

8. All this is emphasized here in order to repeat the appeal already addressed to the framers of water-use laws, namely, that these laws cannot be copied. The law-making experience of others - both where they have been successful and, even with greater reason, where they have failed - is valid and useful, and even indispensable, as an aid in forming opinions and deciding on solutions, but it cannot be relied on indiscriminately. It must be adapted, not adopted, and the local ingredients (physical, historical, human) must be added. This is what was recommended at Caracas 11/ with regard not only to areas of national scope but also to the smaller water-resource management or administration areas of a given country, for even within the same country circumstances can vary from one area to the other.

2. The drafters of water laws and the persons for whom they are intended

9. While the drafting of laws is a task for legal experts, the drafting of water laws, as mentioned in paragraph 5 above, is a task for legal experts with a specialized knowledge of various subjects, working with the aid of experts in related scientific disciplines - for example, hydrologists, hydro-geologists, meteorologists, engineers, economists, administrators, sociologists and the like. This inter-disciplinary character of water law was recognized both at Valencia and at Caracas, 12/ but at the Caracas Conference, there was, in addition, considerable discussion concerning the critical world shortage of not only legal experts but also economists and administrators possessing the kind of education and training referred to. On the basis of the number of legal experts in water law who make up the non-governmental organization which caters for them, the average comes to less than two per country. Thus, at Caracas, 13/ there was detailed discussion of the type and methods of education needed (an "active" type of teaching was advocated), and it was recommended that Governments and the specialized agencies, and more particularly the United Nations University, should set up special chairs and institutes to fill this vacuum and should promote the necessary scientific research in these fields. One example - IMELA, which operates in Argentina with assistance from a UNDP/United Nations project - was cited as worthy of being given world-wide, or at least regional, scope.

10. Water users, as well as persons concerned with water use or its harmful effects, are also in need of education or at least of information on the legal aspects of water use. In some areas, where there is an age-old tradition of water use, the inhabitants have perhaps never studied water law, but they are certainly familiar with it at least in unwritten form. In other areas, however, at least the principles on which this law is based should be explained to all the persons concerned. In some instances, a knowledge of the regulations in force is a secret reserved for the few, especially where responsibility for enforcement of the regulations is scattered about among a number of different agencies or where they have not been given adequate dissemination. This is a problem that demands a solution.

11/ Caracas, 40. (Throughout the rest of this document, the numeral as in this foot-note refers to the number of the relevant recommendation adopted by the particular conference.)

12/ Caracas 4; Valencia 9.

13/ Caracas 44 to 47, 48 (b) and 51.

3. Role of policy-making and legislative authorities

Role of users

11. Water legislation is not an end in itself: it is only one of the various instruments for giving effect to the water policies which it should reflect. This was stated at both Caracas and Valencia. 14/ Accordingly, legislation which is not preceded by (or does not explicitly involve) the adoption of certain policies is unlikely to be effective. The policies may be adopted before the legislation and may even originate with another governmental body.

12. The law can - and should - establish a legal framework within which policy-makers and planners must work. 15/ In some countries, this legal framework is determined initially by the Constitution. As recommended in detail at Caracas, the law may determine the type and variety of information to be gathered, the procedures to be followed (for example, public hearings) and the sectors of opinion which must be heard in order to legitimize the policy-making process. Such a system makes it possible to avoid taking decisions not based on adequate information and to eliminate arbitrariness and favouritism with respect to certain sectors, regions or individuals. When the law establishes such a framework, this should accord judges the right to judge, not whether policy decisions are correct or appropriate, but whether the process leading up to their adoption satisfied the legal requirements. 16/ Even these procedures and legal techniques, which are necessary to safeguard the proper planning and policy-making processes, must, according to the Caracas recommendations, 17/ be evaluated in order to determine whether their economic, social and ecological cost justifies their use and whether better alternative techniques may not exist. At Caracas, it was recommended that, to these two factors, namely, "policies" and "legislation", there should be added a third, thus forming an inseparable triad. That third element is a water development plan for each country 18/ including a plan - adopted by law - for each river basin. 19/

13. The term "legislation" is used in this document in the broad sense of legal norms which apply to all. It includes: constitutional clauses, written laws passed by parliaments or other legislative bodies, agreements and orders of

---

14/ Caracas 4; Valencia 7.

15/ Caracas 15, 25; G. Cano Aspectos institucionales y legales del planeamiento hídrico /Institutional and legal aspects of water resources planning/, International Seminar on Water Resources Planning (Mexico, 1972), vol. 2.

16/ Sandford D. Clark, Legal problems associated with the role of planning in water resources management. See document referred to in foot-note 3, vol. 5, p. 460.

17/ Caracas 15 (e), 26.

18/ Caracas 17.

19/ Caracas 34.

ministerial cabinets, presidential decrees and executive orders, ministerial resolutions, ordinances of municipal deliberative bodies, and regulations made by sectoral authorities dependent on or independent of the executive branch or by the authorities of a political subdivision of a country. In the "common law" countries, the term also includes the decisions of judges. In various other countries the customary law also has the force of a mandatory legal norm. In Moslem countries, laws consist of interpretations of divine revelations to the Prophet. 20/ It should be noted, however, that not all legal norms have the same weight and that some laws higher up in the legal hierarchy provide the framework for others. 21/

14. The category and type of norm that may be established by each governmental body should be determined with great care, particularly where legislative powers can be delegated. In many countries, judges have the power to review legislative acts to determine whether they are consistent with the basic legal framework within which the legislature (parliaments or executive branches) must work, and, if such is not the case, the correct interpretation and the final acceptance of such legislation usually consumes a great deal of time and money in costly litigations, thus slowing down the progress of needed development.

15. Experience shows how desirable it is in this regard, for the administrative branch - particularly at the technical level - to be given explicit authority, within a well-defined framework, to translate into regulations the general norms adopted at the parliamentary level. This system promotes flexibility, facilitates the implementation of legislation and makes allowance for regional differences and the incorporation of new technology.

16. The participation of the general public - and particularly water users - in the planning and legislative processes, as well as in certain aspects of water administration, has been recommended in various forums, including Valencia and Caracas 22/; in some countries, the point has been reached where such participation is considered a subjective right, the exercise of which should be protected. In addition to the means of indirect participation available through the political machinery of popular representation (parliaments, parties, etc.), the sectoral interests of water users, as well as those of persons who, without being users, are affected by water regulations (for example, dealers in agricultural produce or people who live in flood plains but are not water users), should be afforded legal guarantees and means of representation. There is a trend in this direction, which, in some countries, has its roots in long-standing tradition.

17. This participation can be accorded both to individual and to organizations representing groups of users. With respect to the latter, the most frequently used

---

20/ See Dante A. Caponera, Water Laws in Moslem Countries. FAO, Irrigation and Drainage Paper No. 20, 1973.

21/ See document referred to in foot-note 5, p. 1.

22/ Caracas 11, 15 (c), 28, 36; Valencia 8.

method is to organize the user groups on the basis of the distribution systems or networks. 23/ It should be noted that traditions cannot be established by law and that getting consumers accustomed to participating actively in this type of organization is no simple matter. It cannot be achieved instantaneously by means of legislative magic but requires education or the introduction of agricultural extension and demonstration methods. Some laws provide for the compulsory organization of user associations or guilds.

18. The right of participation accorded to users and other interested persons enables them, first of all, to defend their individual interests where these are apt to be endangered by the various procedures established by the law in water-rights matters. The representation of group interests is customarily recognized in the following situations: (1) by means of public hearings at the water-policy decision-making stage prior to the adoption of legislation; (2) in the administratio of water-distribution systems, which, under some systems of law, is entrusted entirely to the users, particularly at the final stages of distribution, at an obvious saving in costs; (3) in the bona fide administration of justice in water matters, which, in some regions, is also entirely or partially the responsibility of judges or arbitrators who are themselves users and are elected by their fellow users.

4. Content of water laws: incomplete laws

Degree of government intervention decisive

19. Since, in almost all countries, water legislation has been passed on a piecemeal basis to deal with certain hazards, community conflicts or specific uses (irrigation, domestic, energy, etc.), gaps generally remain, making the legislation less effective. Furthermore, laws in other fields (tax laws, labour legislation, public service legislation) often include provisions concerning water. Such legislation must be consolidated and the gaps must be filled, since, when faced with such gaps, administrators are frequently confused or even at a complete loss. It will therefore be useful to draw up a list of matters which ought to be dealt with in water laws.

20. From a functional point of view, water legislation should deal with the following categories of relationships: (1) person - person, that is to say, the relationship between individuals with respect to water; (2) person - water, that is, the rules imposed on users regarding the use of water, (3) government - person, that is, the rules governing the relationship between users and the public

---

23/ See, in connexion with the Water Tribunal of Valencia, Spain, the document referred to in foot-note 3, vol. 9, p. 801; and, in general, Joaquín R. López, in Annales Juris Aquarum - I (Mendoza, 1968), p. 235; W. Derrick Sewell and Ian Burton, Perception and attitudes in resources management (Ottawa, 1971).

administration with respect to water; (4) within the Government, that is, the rules governing the adoption and implementation of the water policies which are to be followed by the various bodies and civil servants. Within this range of relationships, water legislation, if it is to be complete, ought to deal with the matters listed in the following paragraph.

21. Effective water legislation should include at least the following topics:

A. Definition of national objectives with respect to water (water policies) and the means for achieving them. 24/

B. Gathering of information. Duties of both individuals and public bodies in this respect.

C. Control and ownership of water (public, private, "res nullius", riparian rights, etc.). 25/

D. Means of acquiring water rights (action of the law, concession, licence, registration, etc.).

E. Restrictions, that is to say, prohibitions affecting certain sources or uses of water.

F. Priorities as between regions, uses and users and in relation to other natural resources.

G. Conditions of use (domestic, municipal, crops, livestock, energy, industrial, mining and petroleum extraction, fish breeding, transport, recreational):

1. Quantity and availability;

2. Quality; 26/

3. Protection of property, natural resources and the environment; 27/

4. Payment in money or in kind;

5. Emergencies (droughts, floods, pollution, fire);

24/ See para. 10 above.

25/ See para. 61 below.

26/ See paras. 41 and 66 below.

27/ See para. 41 below.

6. Engineering works and projects relating to water (construction and operation), including the approval of new technological procedures and developments;

7. Re-use.

H. Legal régime affecting other persons and their property with respect to water use:

1. Easements, restrictions on control and expropriation of private property;

2. Obligations of non-users of water with respect to water.

I. Protection against harmful effects of water (floods, erosion, pollution etc.).

J. Judicial aspects of water. 28/

K. Participation of users and other interested persons in water administration. 29/

L. Water resources administration. Responsibilities and duties of various bodies. 30/

M. Special arrangements for certain categories of water:

1. Underground; 31/

2. Atmospheric; 32/

3. Coastal and estuary; 33/

4. Medicinal and thermal.

N. Registration and classification of waters, water uses and water rights. 34/

O. Evaluation and approval of new techniques for water use.

28/ See para. 34 below.

29/ See paras. 16-18 above.

30/ See paras. 49-51 below.

31/ See paras. 25-26 below.

32/ See paras. 25-26 below.

33/ See paras. 25 below, and Caracas 27.

34/ See para. 63 below.

It was recommended at Caracas 35/ that water legislation should encompass all activities contributing to the rational conservation, development and utilization of water resources, in terms of quantity, quality and the relationship between water and other natural resources or environmental factors.

22. Historically, water was originally used in the service or private interests and through private initiative, without the help of public works and without government intervention. At that stage, private enterprise was supreme and unrestricted. This is still the case in many places where the system of riparian rights or privately-owned water prevails. Governments began to intervene in water administration - and this should be noted, since the degree of State intervention determines the content, scope and range of water legislation - when the demand for water began to exceed the supply (according to the existing state of technology) and when disputes among consumers made government intervention necessary. Another factor which fostered intervention was the size and complexity of the hydraulic works needed to satisfy the steadily increasing demand which was beginning to tax the limit of individual capabilities. A third factor was the advent of statist and socialist political philosophies, not only with respect to the degree of economic and political centralization but also with respect to changes in the systems of land and water tenure. Finally, another factor was simply the natural expansion of State activities because of population growth and technological progress. In many countries today (for example, Colombia and Venezuela), there exist side by side areas in which hydraulic works and water services are administered directly by the Government and areas where the system of riparian rights or privately-owned water excludes any real possibility of government intervention. At times, the two systems may even apply to a single river. This makes it difficult to administer all the water resources of a country in a comprehensive and integrated manner.

23. Establishing a suitable boundary between the State sphere and the private sphere in the matter of water resources poses delicate problems which require a well-balanced solution. While it is true that in many cases the scale of hydraulic works and water services overtaxes the abilities of the private sector, it is also true that the spirit of private enterprise continues to provide the driving power behind economic development, even in socialist countries. A possible solution would be to allow private enterprise to play a role in the final stages of water distribution and utilization, while the Government would increasingly dominate and even monopolize the preliminary phases of planning, policy-making and the construction and operation of large projects. In any case, the law should establish the boundary and should guarantee that it will not be encroached upon by either side. It was recommended at Caracas 36/ that the water plan should be linked to water legislation and that its implementation should be mandatory.

35/ Caracas 33, 22, 41, 12.

36/ Caracas 17, 18.

24. It must also be borne in mind that individual or group interests - sectoral or regional - do not always coincide with the national public interest (that of the country as a whole). While the views of the former must be duly heard and considered, the decisions taken must be based on the national interest.

5. The hydrological cycle and the consolidation of water laws relating to the various water environments

25. At both Valencia and Caracas, 37/ it was recommended that the law should deal with water from the standpoint of the physical unity of the hydrological cycle, which constantly repeats itself as water passes through the following physical states: water on land, ground water, the oceans and atmospheric water. Various consequences flow from this legal concept:

(a) Equal treatment and management, under the law, of surface water, ground water and atmospheric water; 38/

(b) Elimination of the various legally-defined categories of water (for example, publicly-owned water, privately-owned water and ground water), which give rise to different legal régimes for each type of water. It was stated at Caracas that water should be viewed as a single entity in so far as the régime governing its ownership is concerned. What would vary would be the régimes governing its uses;

(c) Unification and consolidation, as proposed at Valencia, of the law governing fresh water and the law governing maritime water, 39/ the boundaries between the two being increasingly more difficult to establish, particularly as regards coastal waters and estuaries 40/ and as regards the problem of marine pollution by effluents originating on land.

26. The hydrological cycle is a law of nature which the laws of man can neither ignore nor contradict. Only very recently (in Colombia, Israel and Peru) have laws provided that surface, ground and atmospheric waters should be administered jointly inasmuch as these three physical states of water are merely different stages of the hydrological cycle and any tampering by man with water in any one of these states will affect the other states. The same consideration applies to substantive legislation. For example, there is less and less justification for

---

37/ Caracas 1; Valencia 1.

38/ Caracas 16 (b); Valencia 5.

39/ See document referred to in foot-note 10, p. 3.

40/ Caracas 27; and W. R. Derrick Sewell, Planning challenges in the management of coastal zone water resources, in document referred to in foot-note 3, vol. 14.

water law to treat naturally-flowing ground water any differently than water which is drawn from the ground by human effort, since the utilization and conservation problems are similar in both cases. Legislation on artificial rainfall must necessarily have an impact on the availability of surface water and on the legal régime governing such water. Surface-water pollution may extend to nearby ground water, and water law must accordingly take this fact into account. This problem was considered at Caracas. 41/ This integrated approach in the case of water law as recommended at Caracas may entail solutions such as the following: (a) the right to utilize water should be granted to an individual on the basis of national priorities and of his previously determined individual requirements, irrespective of the source 42/ of supply (surface water, ground water, rain or snow), so that when a person receives water from one source he cannot receive the same amount from another source; (b) in certain areas (places where aquifers are being recharged) only surface-water use should be permitted, while elsewhere only the use of ground water should be allowed; (c) there should be an obligation to recharge aquifers with excess or already utilized surface water; 43/ (d) in areas where there is sufficient rainfall, the use of surface water for irrigation should be prohibited.

6. Are codes the answer? Changes in legislation

27. As used here, the word "code" means much more than a mere compilation. 44/ It means the functional integration of all the legal norms relating to water in a single body of law in order to facilitate their proper consultation, understanding and interpretation by those for whom they are intended, namely, the users, the rest of the population and the authorities responsible for applying them. Because legal texts are scattered throughout many different bodies of law - as so often happens in this field - the legislation frequently is ineffective. At the functional level, to "integrate" norms in a code also means that they must be headed by a set of general principles which can be applied to resolve unforeseen individual cases in accordance with a particular methodology.

At Valencia, 45/ the "need for a systematic body of laws" was emphasized. At Caracas, 46/ codification on the scale just described was explicitly recommended. The question which serves as the heading for this chapter becomes a purely semantic

---

41/ Caracas 16 (a).

42/ Caracas 5.

43/ Caracas 16 (b).

44/ See document referred to in foot-note 5, p. 1; and Cano, op. cit., in foot-note 7. In the latter document, the subject is considered in greater detail.

45/ Valencia 4.

46/ Caracas 7.

one, since the problem lies much more in the content and scope of the legislation than in what name it is given.

28. The constant need to alter water-use priorities and to ensure that legislation covers new technologies can be met only by the frequent revision and amendment of water laws. The very fact of proposing codification implies introducing changes in the legal régime. The need for a revision at this stage, in order to bring legislation into line with national objectives, was recommended at Caracas. 47/ As any revision carries with it the possibility of interfering with acquired rights, particular caution is imperative, especially where farmers are concerned. It also makes sense when dealing with acquired rights to distinguish between cases in which inherited rights actually are infringed and others in which only expectations are frustrated, without there being any actual loss or gain. One writer has stated 48/ that today it is more important to reallocate water rights than to allocate them. At Caracas, it was recommended 49/ that when altering legislation, "considerable attention should be devoted to the elaboration of transitional provisions permitting a change-over from the old system to the new system and that, in addition, the new precepts should be applied immediately". It was also stated that a generic change in the legal designation of a particular category of water (for example, the transfer of ground water from private to public ownership) "does not imply that compensation must be paid in respect of an existing situation, since to alter the legal system does not constitute expropriation."

47/ Caracas 12.

48/ Radosevich, op. cit., in foot-note 3, p. 23.

49/ Caracas 8, 31.

7. Legislative methodology

29. The ECAFE document mentioned in foot-note 5 represents an excellent methodological exercise which should be extended to other regions.

30. The first task facing anyone planning to draft water legislation is to take an inventory of the legal provisions concerning water which are incorporated in existing legislation and are generally scattered throughout many bodies of law, not all of which relate to water matters. The mere act of preparing a systematic index of the legislation (federal and provincial) in force in his country led the author to fill 260 pages of a book. 50/ After an inventory of the legislation has been drawn up, the legislation must be classified and evaluated in the light of the constitutional context, its consistency with the water policy which has been adopted, and the effectiveness of its implementation. With regard to the further stages of the process, the author draws attention to the document mentioned in foot-note 7, in which he provided a detailed exposition of the methodology followed in the preparation of the Renewable Natural Resources and Environmental Protection Code, promulgated by Colombia in 1974. This methodology is valid, mutatis mutandi, for water legislation, especially as the legal régime governing water was covered in that code. The reader is also referred to a summary review by the author on the same subject. 51/

31. The Caracas Conference made a number of methodological recommendations which suggest that water legislation should:

(a) include the establishment of priorities, taking into account, inter alia, the social, economic, political and physical factors; 52/

(b) be flexible, i.e., easily adaptable to changing circumstances or geographical variations; 53/

(c) integrate norms relating to the control of quantity (volume used) with those relating to the preservation of quality; 54/

50/ Economic Commission for Latin America and Consejo Federal de Inversiones Los recursos hidráulicos de Argentina /water resources of Argentina/ (Buenos Aires, 1969), vol. 7, p. 269-529.

51/ G. Cano, Comprehensive environmental legislation: a summary review of Colombia's Environmental Code, in Environmental Policy and Law (Lausanne, 1976), vol. 1, No. 4, p. 177; Metodología para la legislación integrada sobre el ambiente humano y los recursos naturales /Methodology for integrated legislation on the human environment and natural resources/ (Santiago, Chile, 1976), FAO, document RLAT 801/76/24 (also in English).

52/ Caracas 3; Valencia 3.

53/ Caracas 12; Valencia 4.

54/ Caracas 42; Valencia 6.

(d) be integrated with legislation relating to other natural resources, treating them as a single unit in view of their interdependence; 55/

(e) take into account the relevant socio-economic and ecological studies, 56/ as well as hydrological studies in the case of legislation on ground water; 57/

(f) define and regulate the administrative structure responsible for applying the legislation; 58/

(g) be preceded by methodological studies that will make it possible to define and to make a selection from among the various legislative techniques available; 59/

(h) provide ways and means for evaluating new technologies and embody norms to encourage their adoption, provided that they are socially and economically acceptable; 60/

(i) provide for a determination of the environmental impact of water utilization, including atmospheric water, and stipulate the right of individuals to have recourse to the courts in order to compel the administration to make such a determination. 61/

8. Negative aspects of water legislation

32. It would be useful to consider briefly the reasons why many existing water laws, far from promoting the optimum use of water, have become obstacles to doing so.

A. UNCERTAINTY AND INSECURITY

33. The uncertainty derives, firstly - and this happens often - from the difficulty of ascertaining what legislation is in force or from the discovery that the legislation contains contradictory provisions. See paragraph 30 above.

34. The insecurity may have a physical cause, or it may be rooted in the law. In the first case, it is necessary for the law to offer security, both bolstering the

---

55/ Caracas 20, 22, 2, 12, 41, 27.

56/ Caracas 15 (f).

57/ Caracas 16 (a).

58/ Caracas 24, 33.

59/ Caracas 26.

60/ Caracas 29; Valencia 7.

61/ Caracas 43 (b) and (f).

user's conviction that he will receive the required quantity of water at the appropriate time and assuring him that he will be protected against disasters (such as floods). The user will feel that he can rely on his water supply if the law is fair, and if he believes in its efficient, timely and proper application - if, for example, he is convinced of the efficacy of prompt judicial action in matters relating to water. The certainty of being protected against disasters will depend on the measures imposed by law and observed by the administration - for example, those guaranteeing the stability of hydraulic works and the proper functioning of alarm systems and systems for the prevention and immediate repair of damage.

35. Insecurity rooted in the law derives from the user's lack of conviction that the rules of the game will not be altered to his detriment. This does not mean that such rules should be weak, but, rather, that they should be followed and observed. Nor does it mean that they should be immutable, but, rather, that if a change does become necessary, it will not infringe any traditional rights. This implies that the system of compensation, when compensation is due, must be applied fairly and swiftly, for if legislative changes or changes in individual status are to be made at the expense of the traditional rights of the individual existing by virtue of a promise of legal security conferred by the law, then such security will vanish, and the interest and initiative of the individual will be destroyed. Legal reforms should include provisions for the prompt and fair settlement of the compensation claims to which they give rise.

Another component of legal security is the belief in effective judicial protection against possible arbitrariness on the part of the administration with respect both to the allocation of water rights and to supervision over their proper use.

B. RIGIDITY

36. The inflexibility of water law can be regarded as due to circumstances of both time and place. Inflexibility as regards time may be attributable to the fact that legislation becomes obsolete when it is not brought up to date to reflect changes required by technological progress or other factors. For example, it was pointed out at the Valencia Conference (1975) that some countries drafted their water laws at a time when water was exploited through diversion projects that did not utilize storage facilities; consequently, it was the low water level of the rivers that limited and determined the amount of water rights to be allocated. However, after storage works were built, the quantity of water which could be distributed increased or was spaced over time, thus requiring the adoption of new legal principles to deal with the new situation.

In some areas, particularly those which tend to be arid, at a time when the amount of water available exceeded the demand, the laws were designed to promote its increased use, whereas when the situation was reversed, the laws also had to be changed - although in some countries they were not - in the direction of limiting and controlling the consumption of water, as well as conserving it.

Legislation on flood-plain management has recently made its appearance, and necessarily so, as population pressures have given impetus to settlement in the flood plains, but there are some countries in this situation which have not yet adopted such legislation.

37. In countries comprised of regions having different climatic or physiographic characteristics, the law should permit the adoption of different solutions for the various situations. For example, the priorities of water use cannot be identical for a region where the annual rainfall is 3 metres and for one where it is only 100 millimetres.

38. The question of the flexibility of the law was also discussed at Caracas, 62/ and it was suggested that the law should adjust consumption in relation to periods of scarcity or to inefficient use.

39. The legislator drafting water laws should strive to ensure that the legislation is flexible as regards both categories of the problems just mentioned. One way to attain this goal is to include in the law only basic general principles which, by means of regulations, can be developed in different ways depending on the place of application or in the light of changing circumstances. As regards the relevant recommendations made at Caracas, reference is made to foot-note 53 above.

C. LACK OF COMPLETENESS

40. This was considered above, in paragraphs 19 to 21, and is mentioned again here out of concern for methodology.

D. LACK OF FUNCTIONAL CO-ORDINATION. INTEGRATION WITH NATURAL RESOURCES AND ENVIRONMENTAL LEGISLATION

41. In order to be effective, water legislation must be integrated both functionally and territorially. 63/ The latter aspect is dealt with in the following subsection. As far as functional or intersectoral integration is concerned, stress must be laid on the need to harmonize water legislation with the legislation in other closely related or overlapping sectors of activity and with a country's over-all policy. For example, it is not at all uncommon to find that standards for the prevention of water pollution set by departments responsible for public health differ from or even contradict those set by the department responsible for water management. Water legislation must be harmonized with legislation

---

62/ Caracas 19.

63/ See Documents of the United Nations Interregional Seminar on Integrated Utilization of Water Resources, Fergana, USSR, 1966 (document ST/TAO/SER.C/144), and, in particular, Institutional and Legal Aspects of Integrated Water Resource Management, (United Nations publication, Sales No. E.70.II.A.4).

concerning taxes, labour, credit, land tenure, public health and urban, industrial, 64/ power-generation and mining development, etc., and the respective policies must also be harmonized. Within the sphere of water legislation itself, the norms regulating the quantity of water used must be harmonized with those regulating the quality of the water. In this connexion, see paragraph 31 (c). As to the legal régime for coastal and estuary waters and its harmonization with the régime governing other resources in those same areas, see foot-note 40 above. At Caracas, 65/ a specific recommendation was made concerning the functional co-ordination of both administration and legislation.

42. The National Renewable Natural Resources and Environmental Protection Code, promulgated by Colombia on 18 December 1974, constitutes the first attempt to deal in a comprehensive and integrated manner with a legal régime for natural resources - including water - and other environmental elements based on the physical interdependence of those resources and elements. See the documents of the regional Latin American meeting organized by FAO at Bogotá (July 1976) to discuss this subject. 66/ The Caracas Conference formulated various recommendations regarding the desirability of such legislative integration, 67/ which is advisable when a country reaches the degree of institutional advancement justifying such integration.

E. LACK OF TERRITORIAL INTEGRATION: INTER-JURISDICTIONAL PROBLEMS

43. This is becoming the vexata quaestio of water development, both nationally and internationally, and water legislation and law must provide a solution for it.

Hydrographic basins are delimited by the watersheds, and they neither recognize nor respect artificial political divisions drawn by man. This occurs on both the national and the international planes, which we shall now examine:

(i) National

44. This problem arises mainly - though not exclusively - in federal countries. In such countries the question is to establish the legal régime for inter-State, interprovincial, intercantonal or interrepublic (as in the case of the federated republics of the USSR and Yugoslavia) rivers and basins. No attempt will be made here to deal with the administration of these basins but only with the legal principles that should govern their utilization. The first problem is to decide which organ of a country's political structure is empowered to lay down the relevant norms. In some countries these may be established only by means

---

64/ Caracas 43 (c).

65/ Caracas 39.

66/ See foot-notes 7 and 51 above; also G. Cano, Introducción al derecho y administración ambientales y de los recursos naturales /Introduction to environmental and natural resources law and administration/ reprinted from the Revista Javeriana (Bogotá, 1974) Nos. 414-416; and A legal and institutional framework for natural resources management (Rome, 1975) FAO Legislative Studies No. 9.

67/ Caracas 2, 12, 20, 22, 41.

of contractual agreements (such as "compacts" or interprovincial treaties), whereas in other countries only the central parliament or, in some cases, the highest court of justice is vested with this power. The second problem is to decide who is authorized to apply or enforce the norms. The third problem is what are the legal bases 68/ for such legal regulations. In non-federal countries the question may arise among the various territorial departments, municipalities or communes which share the same river basin. The ideal would be to adopt a single legal régime for all the jurisdictions involved (whether in the form of a treaty, "compact", legal decision or arbitral award). Failing that, parallel legislation might be attempted or the simultaneous standardization of legislation through unilateral action. This has been recommended as a first step to deal with the problem of water-pollution control in cases where various countries or political jurisdictions are involved and no agreement can be reached.

A fairly common solution has been to create ad hoc authorities or bodies for the administration of basins and to assign to them powers for certain well-defined matters which are ordinarily the responsibility of the regular government ministries or departments. Such bodies may be empowered to apply the general water legislation of the country, or they may be given ius edicendi, in other words, the authority to issue regulatory norms. 69/

45. The question of the transfer of water between basins is also related to this problem particularly when the basins are situated in different political jurisdictions. The law must establish the criteria and procedures for authorizing such transfers, with provision for all the parties concerned to be heard. Relevant criteria were recommended at Caracas. 70/

(ii) International

46. As regards the legal aspects of the problem of international basins and other international water resources, whether surface or underground, the first step towards a solution is, of course, the conclusion of treaties between the Governments concerned. When the conclusion of such treaties proves impossible, or when differing or conflicting interests are at stake, it is necessary to rely on the rules relating to international watercourses or, in the absence of such rules, on the general principles of the relevant law. Various non-governmental bodies have

---

68/ Centro de Economía, Legislación y Administración del Agua /Centre for Water Economy, Legislation and Management/, Seminario de administración de cuencas interjurisdiccionales /Seminar on management of interjurisdictional basins/ (Mendoza, Argentina, 1975), document CELA/De/R.1/5/75.

69/ See Systems of administrative organization for the integrated development of river basins, United Nations document E/CN.12/503 (1959); and Integrated river basin development (United Nations publication, Sales No. E.70.II.A.4, New York, 1970); see also document referred to in foot-note 71 below, p. 40.

70/ Caracas 21; see para. 70 below.

been active in defining such rules and principles, and this work is continuing. 71/ The General Assembly of the United Nations 72/ has adopted various resolutions on the exchange of information and consultations in this field. It has also urged the International Law Commission to embark on the task of codifying the law of the non-navigational uses of international watercourses, and the Commission has been devoting itself to that task. The United Nations Environment Programme has also been entrusted with responsibility in this field in so far as environmental matters 73/ are concerned.

A recent United Nations publication, which is based on the work of a Panel of Experts, 74/ outlines the activities thus far accomplished in this field and treats the legal aspects of the development of international water resources as distinct from the law relating to international watercourses. Among the recommendations of that panel, are the following:

> Appropriate international rules pertinent to the utilization and development of international (non-maritime) water resources should be adopted under the auspices of the United Nations, preferably in the form of a general convention. The Panel felt certain that in the preparation of such rules the work already accomplished in this field by other bodies such as the Institute of International Law, the Inter-American Bar Association and the International Law Association, including the Helsinki Rules on the Uses of the Waters of International Rivers, would prove to be of much relevance and assistance.

In the Americas region, the Inter-American Juridical Committee and the Inter-American Bar Association - both of which are affiliated with the Organization of American States - have prepared a draft inter-American river convention which is to be considered by a special Inter-American conference. Although the holding of this conference has been agreed upon, no specific date for it has as yet been determined. 75/

In the African region, the Commission of Jurists of the Organization of African Unity recommended the adoption of the principles of the Helsinki Rules.

47. The above-mentioned General Assembly resolutions have served to define a legal doctrine in regard to two matters: the exchange of information and the principle of consultation between countries sharing the same international hydrographic basin. The principle of consultation would apply where a work planned by one country might cause considerable harm to another country in the same basin or to the

---

71/ See Management of international water resources: institutional and legal aspects, annexes II and III, (United Nations publication, Sales No. E.75.II.A.2, New York, 1975).

72/ General Assembly resolutions 1401 (XIV), 2926 (XXVII), 3071 (XXVIII), 2669 (XXV), 3129 (XXVIII) and 3281 (XXIX).

73/ General Assembly resolution 3129 (XXVIII); UNEP resolutions UNEP/GC/26, UNEP/GC/44/III and UNEP/GC/55, and UNEP decisions 18 (II) and 44.

74/ See document referred to in foot-note 71.

75/ Organization of American States, Draft Inter-American River Convention (Washington, 1965).

international community. Principle 21 of the Stockholm Declaration covers all natural resources - including water resources - and is therefore applicable to the influence of other kinds of natural-resource management on water management and vice versa. Recommendations 51 to 55 of the Stockholm Conference relate to the practical consequences arising from the application of this principle. 76/

48. The Caracas Conference recommended that international organizations should support the establishment of appropriate legal régimes for international water resources; 77/ it supported the need to codify the law relating to international watercourses; 78/ and it recommended that the International Law Commission should expedite the work of codification and should consider the legal principles recommended by the Conference for application at the national level, particularly those principles relating to the interdependence of the different kinds of natural resources. 79/ In so far as Governments sharing international basins, including ground-water basins, are concerned, the Conference also made the following recommendations: 80/

(a) Efforts should be made to establish agreements embodying the basic common principles of planning;

(b) Co-operative machinery should be established between the countries concerned and should provide for: (i) non-discrimination in the search for solutions to the problems of pollution and other harmful influences, and in ensuring free access to justice for all concerned; and (ii) the exchange of information between the States concerned as regards projects and activities which might result in pollution or have other harmful effects in another State;

(c) In view of the fact that the complete benefits to be gained from international water resources are greater where co-operative arrangements exist between the countries concerned, those countries should: (i) seek ways and means of establishing and improving international co-operation - among the countries sharing the basin - through the establishment of appropriate administrative and legal machinery, bearing in mind the principle of limited territorial sovereignty over international water resources; (ii) give attention to improving the machinery for the settlement of disputes in cases where the countries sharing a basin have difficulty in reaching agreement; and (iii) encourage universities and scientific institutions to pay greater heed to social-science research in the areas of public administration, politics, science, law and economics in so far as the specific problems of international water-resource management are concerned.

76/ Report of the United Nations Conference on the Human Environment, (United Nations publication, Sales No. E.73.II.A.14, New York, 1973).

77/ Caracas 40 (a).

78/ Caracas 49.

79/ Caracas 50 and foot-note 72 above.

80/ Caracas 52, 15 (f), 16 (a).

F. FAULTY ADMINISTRATIVE CO-ORDINATION

49. There is a well-known proverb which states that the road to hell is paved with good intentions. Excellent legislation can fail if the system established for its implementation is inadequate. The fault lies with the manner in which the administrative machinery is organized. For example, in a given country, enforcement of the law for the abatement of water pollution is entrusted to the mayors of the various towns. The legal norms are good, but the mayors are only human and have political interests - for instance, they want to attract more industry to their cities because this means a higher employment rate and higher tax returns. The result is that the mayors compete with one another to see who can be most lenient in applying the legislation because that will bring in more taxes and provide more employment in their area. The same thing can occur among nations which have agreed to apply a common legal régime for the prevention of pollution in order to avoid price competition in regard to manufactured goods (the cost of such goods will naturally be lower in the countries which are less strict about the quality of their industrial effluents).

50. Inefficient implementation of the law on the part of the administration may be due to various factors: the most recently mentioned (deliberate lack of will), lack of internal co-ordination, shortage of staff or of sufficiently trained staff, lack of proper equipment, and lack of awareness of the objectives of the legislation. The legislator must take all these matters into account and must not confine himself to adopting legal texts.

51. At Valencia, 81/ it was advocated that water management should be organized on a unified basis at the national, basin and community levels, that is, on a functional rather than a political basis. At Caracas, it was recommended that water law should make provision for: 82/

(a) An administrative structure responsible for defining a water policy and controlling the use of water;

(b) A systematic concept of administration, embracing all the activities with which administration is concerned;

(c) Centralized planning for the entire basin or water management area, while entrusting the operational aspects to bodies or agencies responsible for the various uses or sectors, whether public or private;

(d) Adoption of the basin as the unit for water-resource management without prejudice to the existence of political and geographical management units (for example, economic development units) having jurisdiction over water resources extending beyond or not coinciding with the hydrographic basins;

(e) Avoidance of the proliferation of new administrative institutions;

(f) Interagency and intersectoral co-ordination and co-operation.

81/ Valencia 2.

82/ Caracas 14, 24, 33, 35, 38, 39.

G. USE-ORIENTED INSTEAD OF RESOURCE-ORIENTED

52. In general, it can be stated that, in respect of water legislation, the majority of countries have at some time passed through or are likely to pass through the following stages: 83/ (a) legislation oriented towards certain hazards deriving from the existence or use of water or water run-off (regulations on flood control, natural run-off of rain-water, or construction of wells in urban areas); (b) legislation oriented towards particular uses of water (laws on the supply of potable water, irrigation, fish-breeding or river navigation); (c) legislation oriented towards multiple uses of water and conservation of water as a resource, such legislation being concerned primarily with water and the co-ordination of its uses and secondarily with the particular uses themselves; (d) legislation oriented towards the joint management of various natural resources, which takes into account and regulates the interdependence of water and other natural resources (legislation dealing simultaneously with water, soils and forests, etc.); (e) legislation oriented towards the environment and dealing with water, other natural resources and other elements of the environment (for example, the Colombian Code on Renewable Natural Resources and Environmental Protection, 1974). This is not to say that environmental legislation should encompass all water legislation, since there are areas of the latter which do not necessarily find their place in environmental law.

Most countries are at stage (b), and this impairs the effectiveness of their water laws, owing to a lack of intersectoral co-ordination and to contradictions between the laws which regulate different water uses. The more modern systems of legislation are moving towards stage (c), that is to say, they are primarily oriented towards water as a resource, and the regulation of water uses is of secondary importance.

H. LACK OF REALISM

53. This subject has already been treated in paragraphs 4, 7 and 8 above, where it was stated that all water legislation should be adapted to the physical, economic and cultural circumstances prevailing at a given time in a given place. A few examples serve to illustrate this assertion:

(a) The laws in force in humid regions, where irrigation is not required and the principal use of water is for navigation, do not need to take water demand into account because of the surplus supply of water. Into this category fall the laws which established the system of riparian rights. When an attempt was made to extend this system to arid regions where the demand for water exceeded the supply - as occurred in the western part of the United States - the régime did not work and became ineffectual. The Reclamation Act (1907), by abandoning the system of riparian rights, helped to correct that defect.

83/ See document referred to in foot-note 66, pp. 3 and 18; United Nations, document E/4636/Add.1, article entitled: Law, institutions and natural resources.

(b) The prior appropriation system is suitable where the intention is to encourage greater use of water, that is to say, to accelerate water development. When, however, the demand for water begins to exceed the supply, it becomes necessary to control or restrict the use of water, and this system then becomes ineffective and, therefore, obsolete.

(c) A sophisticated system of water-use charges based on the volume of water consumed can function well and encourage efficient use in areas where the users have been properly educated and where the economy is sufficiently robust to absorb the cost of meter installation. When either of these circumstances is absent, however, the system fails to work, and its practical application simply lapses.

(d) A water law which, for purposes of conservation, allows ground water to be extracted only during prescribed hours or in limited hourly amounts is doomed to failure unless the cost of installing clock-type or volumetric meters can be borne by the users.

A law making irrigation by spray or trickle application techniques mandatory in areas where users have not received adequate technical training will also surely come to grief unless such training is provided, before the law comes into force.

(e) Where laws permitting the assignment of water rights on the basis of percentage quotas of stream flow have been enacted prior to the existence of storage works, they will need to be supplemented when such works are constructed because the system of assignment will have to be modified.

54. At Caracas, 84/ it was recommended that legislation should be framed solely in the light of the political, legal, economic and hydrological conditions prevailing in the region concerned, whether a country or a lesser area (basin, etc.)

I. ATTITUDE TOWARDS THE ADOPTION OF TECHNOLOGY

55. The Secretary-General's report 85/ warns against the hazards of adopting new technology without due reflection, a warning which is not meant to imply that there should be resistance to progress. Water laws should be sufficiently flexible to accommodate technological progress, as was indicated in paragraph 36 above. However, as was recommended at Valencia, 86/ such laws should be adopted only when they are suited to the social and economic climate of the times. To this should be added that technological considerations must also be taken into account; hence the Caracas recommendation 87/ that legislation should provide ways of assessing new technology before its application is approved.

84/ Caracas 40.

85/ See document referred to in foot-note 2.

86/ Valencia 7.

87/ Caracas 29.

J. FACTORS OF LEGAL OR CUSTOMARY ORIGIN HAMPERING THE DEVELOPMENT OF WATER RESOURCES

56. In some instances, the law has sanctioned certain religious or political traditions or customary practices which, although they may have been appropriate in the past, have become obsolete and are hampering the development of water resources. In Peru, for example, the derechos de cabecera accorded preferential rights to upstream users over downstream users, thus subjecting the latter to the arbitrary practices of the former. The 1969 water legislation reform, by abolishing such rights, eliminated this impediment to water-resources development.

57. Systems establishing different classes of rights, to be exercised simultaneously over the same waters, were adopted to encourage the development of water resources by favouring and protecting the earlier users in point of time over subsequent users. In cases where water demand increases and plantations or industries which, economically, are in the public interest have been built up under the protection of different categories of rights, it usually proves impossible to continue maintaining the old distinctions, since these now become factors impeding water development. In a ground-water basin in which 10,000 wells are operating, it would be impossible, without creating social turmoil, to attempt to limit the consumption of the newcomers in order to protect the older-established users.

58. The allotment of water for irrigation on the basis of units of irrigable area to be supplied with a maximum volume of water over a period of time encourages wastage rather than the most efficient use of water. It may also encourage the illegal or unauthorized use of the surplus water for areas other than the authorized areas.

59. Legislators should carefully examine both existing and potential factors impeding water development of the kind described - many more examples could be given - with a view to their elimination.

9. Prevailing trends in the modernization of water laws

60. As used in this context, the word "trends" means that certain recent legal reforms have begun to provide the solutions which this chapter is attempting to identify. Mention of these, however, should not obscure sight of what was said above in paragraphs 4, 7 and 8.

A. PUBLIC OWNERSHIP OF WATER AND INCREASED GOVERNMENT CONTROL

61. There is a marked and widespread trend towards increased government control over the management and use of all waters. This has taken various forms: incorporation of waters into the public domain; direct and undisguised government ownership; or simply ultimate State control, including control over the use of waters which the law defines as the private property of individuals. It was advocated at Caracas that all waters should be designated as public, 88/ being either communally owned and available for the use by all or, alternatively, being subject to ultimate State control.

B. ADMINISTRATIVE MANAGEMENT VERSUS JUDICIAL MANAGEMENT

62. In some countries - especially the common law countries - judges play an important part in assigning water rights, both to individuals and in resolving conflicts between public bodies. Their powers of control over management by the public administration are immense. At Caracas, however, it was advocated that the administration (the executive branch of government) should both grant water rights and impose servitudes, rights of way and other restrictions on the immovable property of third parties. 89/ It would seem that judges do not normally have direct access to the requisite technical and economic information or to comprehensive data permitting an over-all view of water development problems.

C. NECESSITY OF MAINTAINING A WATER RESOURCES INVENTORY AND A REGISTER OF WATER RIGHTS

63. Both these measures concern the problem of a Government's need to possess adequate information for the efficient management of water resources. In countries in which the use of certain waters by individuals without the requirement of governmental authorization is permitted by law, the Government does not know the identity of the users or how much water is being used. This happens with riparian rights and certain spring and ground waters. There is clearly a current trend towards making mandatory: the determination of water resources and the maintenance of a water-resources inventory; the registration of water-use rights (including privately-owned waters); and the supply of information on the amount and purpose of

---

88/ Caracas 1, 14, 30.

89/ Caracas 5.

water use. At Caracas, it was recommended 90/ that the obligation to register water rights and to contribute towards the register and the inventory should be imposed by law.

D. WATER CHARGES AND TAXES

64. This subject is treated in another document, similar in its purpose to the present report. 91/ Suffice it to recall here that, in so far as legal considerations are concerned, it was recommended at Caracas 92/ that taxes should be imposed as a means of ensuring the efficient use of water and that water charges should be set as a means of apportioning the costs among users and of offering incentives to promote efficient use and deter wasteful practices and pollution.

E. ENVIRONMENTAL CONSERVATION VERSUS DEVELOPMENT

65. Since the Founex Report, 93/ it has become clear that environmental conservation is not incompatible with development and that in developing countries the latter is a prerequisite of the former. At Caracas, where the participants took this same view, it was recommended 94/ that: the law should ensure that the conservation of natural resources does not hamper development; development and environmental protection should go hand in hand in hand so that a favourable ecological balance is maintained; and the use of water resources should be co-ordinated with pollution control.

F. HE WHO POLLUTES MUST PAY

66. It was recommended at Valencia and Caracas 95/ that this economic principle should become a rule of law and be incorporated in legislation, as has already been done in the case of a number of modern laws.

G. ATTACK HARMFUL EFFECTS AT THEIR SOURCE

67. It was advocated at Caracas that the law should deal first with the causes of the harmful effects of water, 96/ especially those deriving from floods and soil

---

90/ Caracas 5, 13 (c).

91/ Caracas, Warford.

92/ Caracas 5, 37.

93/ Development and Environment (Founex, 1971); see document A/CONF.48/10.

94/ Caracas 6, 13 (f), 42; Valencia 6.

95/ Valencia 6; Caracas 9, 43 (c).

96/ Caracas 9, 13 (e).

erosion, and subsequently attempt to control such effects. This matter is closely related to what was said in paragraphs 41 and 42 above concerning the integration of water legislation with the legislation on other natural resources, especially flora, fauna and soil, including their international aspects. 97/

H. THE BASIN AS THE UNIT OF WATER MANAGEMENT. WATER TRANSFERS

68. Adoption of the hydrographic basin, not only as a unit of administrative water management, but also as an object of legislation, was the subject of several of the recommendations made at Caracas. 98/ However, it was stated at Caracas that, for purposes other than water development, such as economic or social development, it may be desirable to have a broader geographical unit of administrative management than the basin itself, or to include all or part of a number of basins, because the political and administrative structure of a country should not be turned into a "federation of basin authorities".

69. A water bill for Argentina 99/ attempts a legal definition of the term "basin" which takes into account the situation where the area of a surface basin and that of a subterranean basin do not coincide.

70. Transfer of water resources between basins was also a topic of discussion at Caracas, 100/ the legal régime governing such transfers being important in international as well as domestic law, as evidenced by the case of Lake Lanoux. Adoption of the following general legal principles was advocated at Caracas: firstly, that transfers should not give rise to irreversible long-term imbalances in the regions concerned, and, secondly, that full satisfaction of all the developmental requirements of the basin supplying the water should be ensured.

I. DETERMINATION OF PRESENT AND PROSPECTIVE USES

71. There has been a gradual evolutionary trend in laws away from those which recognized the private ownership of water, and allowed owners or concessionaires to use it as they pleased towards laws which define permissible water use and even, in extreme cases, which authorize, for example, the use of water for growing certain crops but not others. It was proposed at Caracas 101/ that water development plans approved by law should specify the purposes for which water may be used in the light of its availability, and should do so on the basis of forecasts made within the framework of sectoral policies and the over-all development policy.

97/ Principle 21 of the Stockholm Declaration (1972); see International Law Association, Report on the 53rd Conference - Buenos Aires (London 1968, p. 531).

98/ Caracas 14, 32, 34.

99/ G. J. Cano, Anteproyecto de legislación nacional de aguas /Preliminary draft of national water legislation/ (Buenos Aires, 1972) p. 7, articles 3 to 5.

100/ Caracas 21.

101/ Caracas 23.

J. LEGISLATION ON FLOOD PLAINS, EROSION, SALINITY AND POLLUTION

72. As these are all factors in environmental deterioration, it was recommended at Caracas that water legislation should make adequate provision for preventing or mitigating them, 102/ especially as regards areas having a fragile ecological balance.

K. ORGANIZATION OF INFORMATION

73. The documentation for item 1 of the agenda of the Conference demonstrates in itself the importance of possessing adequate information in the field of water management. While such information relates primarily to hydrometeorology, it also concerns: cartography, geology, the quantitative aspects of water use, water quality, economic considerations (costs), social considerations (population sectors supplied with water), ecological impact and legal matters (ownership or possession of water rights). Legislation can - and in the case of some modern laws does - require users to supply information on the type, the adequacy and even the cost of water supply. The use of meters as a source of information may also be imposed by legislation.

74. A particular aspect of this problem, which the legislation or the law should provide means for resolving, is the intergovernmental relationship, whether as between the political subdivisions of a federal State or as between sovereign States at the international level. In respect of the latter, see paragraphs 46 to 48 above. The Colombian Environmental Code referred to in paragraph 42 above (article 10 (a) and (b) and articles 20 to 24) deals with this matter both domestically and internationally and is significant in the latter regard because of the unilateral adoption, through domestic legislation, of standards which are internationally binding on the Government enacting the legislation.

10. Water legislation as a policy instrument in other areas

75. As was stated in paragraphs 11 and 41, neither water legislation nor water policy constitute ends in themselves; rather, they should be regarded simply as integral parts of a broader whole, namely, a country's over-all policy for the achievement of national goals. That being so, water policy, together with water legislation, may be and often is used for purposes unrelated to water as such. For example, its function may be to: influence the location and size of urban or rural human settlements by withholding or providing water supply; promote the integration of different regions of a country by providing for the diversion of water from water-surplus to water-deficit areas by means of water grids or interbasin transfers; influence land-distribution and land-tenure patterns in arid and semi-arid areas where there can be no land reform without water reform; implement a zoning policy by providing or failing to provide water in conformity with the policy objectives; influence food production by granting priority to the agricultural sector over others in the use of water; or implement an environmental policy.

102/ Caracas 43 (c) and (e).

11. Conclusions

76. It was not intended that this paper should contain recommendations, since the participants in the Mar del Plata Conference will no doubt wish to extract and formulate these for themselves.

It should be borne in mind that the Valencia "considerations" and the Caracas recommendations represent the essence of the many working papers presented at those two forums. More than 100 documents, totalling over 1,500 printed pages assembled in 17 volumes, were discussed at Caracas. These figures are given to highlight the fact that the 52 recommendations referred to throughout this paper represent the distilled thinking of many extremely highly qualified water experts from all parts of the world. Both the Caracas and the Valencia Conferences brought together for completely free discussions participants from North and South and from East and West.

This monograph is intended as a methodological aid for those who propose to embark on the task of adopting water legislation or brining it up to date. Its purpose is similar to that of the ECAFE document referred to in foot-note 5, and it does not claim to offer specific recommendations for any particular problem. An attempt has been made (chap. 8) to identify the factors which have caused many existing water laws to be ineffective or to constitute bottle-necks, and an account has been given in some detail (chap. 9) of the prevailing trends in the modernization of water laws. Thus, the reader may, if he so desires, draw his own conclusions and make his own recommendations in the light of the circumstances in his own country. The international organizations, for their part, may wish to consider the recommendations addressed specifically to them by the Caracas Conference. 103/

103/ Caracas 48 to 51.